

Abstract

On-farm experiment was carried out in southwest Kenya in the period 2002 to 2005. The objective was to determine the most profitable source of nitrogen for maize production, and assess various application quantities to identify the most profitable rate. Treatments investigated were: mucuna green manure applied at rates of 30, 60, 120, 240 and 480 kg N ha⁻¹; inorganic fertilizer-urea rates of 0, 30, 60 and 120 kg N ha⁻¹. At tissue N concentration of 1.85 to 2 % for mucuna, the rates worked to 1.5, 3, 6, 12 and 24 t DM ha⁻¹ equivalent of its green biomass, respectively. Randomized complete block design with four replications was used. Data was collected on maize grain yield and price, cost of mucuna N and its application. Procedures applied in economic analysis were net benefits, dominance and marginal analyses. The beneficial rate of mucuna green manure was 6 t DM ha⁻¹ to supply 120 kg N ha⁻¹ with marginal rate of return (MRR) of 123%. In absence of capital to invest in mucuna N production, the inorganic fertilizer rate of 60 kg N ha⁻¹ is profitable and can be used but with expectation of comparatively lower MRR of 73%. In the absence of required capital to produce the target 120 kg N ha⁻¹ equivalent of mucuna biomass, application of inorganic N at 30 kg ha⁻¹ is the most beneficial practice in all seasons. Lower application rates might require supplementation with inorganic N to make up to the required amount.